

corpus luteum sets in, however, nerve fibrils can often be seen in close relation to the individual cells. This late appearance of nerves in the corpus luteum may be due, WALLERT thinks, to faulty technique the large amount of fat in the fresh corpus luteum seriously interfering with the staining reactions, and thus preventing satisfactory demonstration of nerve fibers, or it may stand in some relation to the gradual evolution of what he considers a true "interstitial gland" from the remains of the corpus luteum. At any rate, WALLART always found an exceedingly rich network of fibers associated with the terminal stages of this structure, even including the apparently inert mass of connective tissue known as the corpus fibrosum, which represents the terminal form of the extinct corpus luteum. He thinks, therefore, that even this structure has a distinct secretory function, by which the ovary is to some extent brought into relation with other ductless glands. Although not able to demonstrate positively the presence of ganglion cells in the ovary, WALLART discovered numerous bodies so strongly suggestive of them as to warrant the belief that in all probability ganglionic elements are in reality present.

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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Cholesterin in Blood.—MILKOWITSCH (*Russki Wratsch*, 1911, xxii) determined in a number of experiments the influence of cholesterin, lecithin, adrenalin, and other substances upon the process of phagocytosis. He used the Wright method. He employed the *Staphylococcus aureus* and tubercle bacillus in conjunction with normal human serum and leukocytes. He comes to the conclusion that both cholesterin and lecithin increases the phagocytosis of *Staphylococcus aureus* and tubercle bacillus. ROEHMANN (*Berlin klin. Woch.*, 1912, No. 42) found in the red blood cells, but not in the blood plasma, an enzyme which acting like a lipase splits the cholesterin-ester. He calls it a cholesterase. It is important to determine whether other tissues contain this cholesterase and whether an increase of cholesterin ester in amyloid kidney and in arteriosclerosis has a relationship to this ferment. It is suggested that the accumulation of cholesterin in the liver is associated with the cholesterase of the red blood cells which are destroyed by this organ. The deviation of the complement in the

Wassermann reaction is enhanced by the presence of cholesterin. It would appear that the sera giving a positive Wassermann contained more cholesterin than others. It may be that this increase is directly related to an excess amount of cholesterase in the serum. CITRONBERG (*Biochem. Zeitsch.*, 1912, xiv, 281) has shown that the blood of horses is capable of decomposing cholesterin-esters without the addition of liver extract. This decomposition does not take place in serum alone, but it appears that the cholesterase is contained within the red blood cells. It is indicated, in fact, that the red cells not only contain the cholesterase but also the cholesterin-ester. PRINGSHEIM (*Munch. med. Woch.*, 1912, 1757) reports the case of a man, aged thirty-four years, who after a severe cold developed hemoglobinuria without marked change in the blood picture. The Wassermann was positive. Mercurial treatment was of no value. The patient then received five injections of 0.05 grms. of cholesterin in a 10 per cent. emulsion intramuscularly in a period of eleven days. The hemoglobinuria disappeared. After eight days he had another attack as severe as original. The resistance of the red blood cells was normal to saponin solutions. BUEGER and BEUMER (*Berlin. klin. Woch.*, 1913, No. 3) studied the lipid content of the blood. The greatest cholesterin and lecithin values of the serum was observed in diabetic lipemia and cholemia. In a case of eclampsia they also found an increase. Less than the normal quantity was found in pernicious anemia, chlorosis, malignant cachexia, and in inanition. It is true that others have stated to have found an increase under conditions similar to these. A constant relationship, therefore, is not necessarily found in given diseases since the content in lipoids is influenced by the diet and the nutrition of the patient. In every serum some free cholesterin was found, equaling about 30 per cent. of the fats present. KANDERS (*Biochem. Zeitsch.*, 1913, lv, 96) used the method of Windaus and determined the cholesterin content of the serum of the horse, dog, cow, rabbit, guinea-pig, and sheep. He found the cholesterin content to increase in the following order: cow, horse, dog, sheep, guinea-pig, and rabbit. In the order of cholesterin or cholesterin-ester content of the red blood cells, are dog, guinea-pig, rabbit, cow, and sheep. He found that human sera with positive Wassermann reactions had a lower cholesterin ester content than the negative. OBAKEVITSCH (*Russki Wratsch*, 1913, No. 30) determined the cholesterin content of blood by the colorimetric method of Grigaut. The cholesterin content in a litter of blood serum normally varies from 1.4 to 1.8 grams. A fatty diet readily increases the cholesterin content. Hypercholesterinemia was found in pregnancy, nephritis, cholelithiasis, arteriosclerosis, lues, and during convalescence from acute infections. On the other hand, hypocholesterinemia was found in acute and subacute infections, anemias, and hemolytic jaundice. GAUCHER and DESMOULIER (*Bull. de l'Acad. de Med.*, Paris, 1912, No. 26) found a striking parallelism between the cholesterin content of the serum and the Wassermann reaction. CANTIERI (*Wien. klin. Woch.*, 1913, No. 48) reported the treatment of splenic anemia in a young child by injecting cholesterin-esters of olein and palmitin. He reported marked improvement in the blood picture and a diminution in the size of the spleen. STRUBER (*Biochem. Zeitsch.*, 1913, li, 211) found that cholesterin diminished the phagocytic activity. Lecithin had no particular effect upon

the phagocytosis but it inhibited the action of the cholesterol. Intravenous inoculation of 70 to 90 c.c. of a 0.5 per cent. to 1 per cent. emulsion of cholesterol reduces the phagocytic index in cats enormously. The reaction may persist for days. On the other hand lecithin slightly increases the index as well as neutralizing the depressing influence of cholesterol previously inoculated. Lecithin heated to 70 degrees reduces its activity. WACKER and HUECK (*Archiv. f. Exper. Path. u. Pharm.*, 1913, lxxiv, 416). Normally the cholesterol in the blood is distributed in the serum as well as the cells. The white cells contain five times as much cholesterol as the red blood cells. The serum contains both free cholesterol and cholesterol esters. The separation of fibrin carries no cholesterol with it. The normal cholesterol content is fairly uniform but is more or less disturbed by diet, muscular activity, and tissue destruction. The feeding of free cholesterol increases the cholesterol and cholesterol-ester content of the blood serum. The same may be observed in the inoculation of cholesterol or oleic acid cholesterol ester underneath the skin. The blood cells play but little part in this alteration of the cholesterol content of the blood. A cholesterol diet leads to the deposition of fat in various organs and cholesterol fat mixtures may be observed in the cortex of the adrenal, liver, kidney, spleen, bone marrow, gall-bladder and adipose tissue. They also found that prolonged muscular exercise led to a diminution of the cholesterol esters in the adrenal while that in the blood was slightly increased, while rapidly fatiguing exercise led to a diminution in the blood serum and a slight increase in the adrenals. FISCHL (*Wien. klin. Woch.*, 1914, No. 27) found an increase of cholesterol in the serum of patients suffering from various dermatoses (urticaria, eczema, mycosis fungoides, xanthoma). He believed that this increase of the cholesterol is associated with a protective reaction of the serum.

Mixed Vaccines against Typhoid and Paratyphoid Fevers.—KABESHIMA (*Centralb. f. Bakt.*, 1914, 74, H. 1) reports upon the use of mixed vaccines as used in the Japanese Marine. A vaccine containing B. typhi, B. paratyphi A and B were administered to many individuals. The local and systemic reaction which followed the inoculation of the mixed vaccine was not greater than that observed in simple ones. In experiment it was shown that the individuals possessed an immunity to infections of each organism and that the use of such vaccines had a definite practical value in the army.

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